



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/021,716 | 11/30/2001 | Paul Edward Arch | 9220USA-NONP | 4655 |

7590 11/08/2006

Suzanne Kikel
NOVA Chemicals Inc.
400 Frankford Road
Monaca, PA 15061

| EXAMINER |
|----------|
|----------|

ZEMEL, IRINA SOPHIA

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1711

DATE MAILED: 11/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|-----------------------------|--|
| Office Action Summary | Application No. 10/021,716 | Applicant(s) ARCH ET AL. | |
| | Examiner Irina S. Zemel | Art Unit 1711 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1,3-24 and 26-50 is/are pending in the application.
- 4a) Of the above claim(s) 27-48 and 50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3-24,26 and 49 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3-24, 26 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/15703 to NOVA Chemicals of record.

The rejection stands as per reasons of record. Insofar as the amended limitations in claim 1 to the amount of the blowing agent in the particle (2.5 to 3.5.), this limitation is still considered to have been obvious from the disclosure of the reference. Specifically, while the reference does not disclose foamed (pre-expanded) particles with this amount of blowing agent, the reference expressly discloses the effects that are governed by the amount of the blowing agent in the pre-expanded particle, such as density of the final product. The reference further expressly disclosed particles with lower than the claimed amount of the blowing agent and higher amount of the blowing agent, and further discussed the properties of the final products based on such particles. Thus, optimization of the properties of the final product based on selection of amount of result-effective variable, i.e., the amount of the blowing agent in the pre-expanded particles, is still considered to have been within routine experimentation of an ordinary artisan in the absence of showing o unexpected results that can be attributed to the specifically claimed amounts of the blowing agent in the pre-expanded particle.

Response to Arguments

Applicant's arguments filed 8-24-2006 have been fully considered but they are not persuasive.

The applicants argue that the claimed amounts of the blowing agents, i.e., 2.5-3.5, are critical for the invention and became even more critical in view of the recent environmental regulations. The applicants further argue that the claimed range is ideal in view of low VOC emission and long shelf life. While this may be so, these results are completely expected results and are discussed in the background of the cited WO reference. In particular, on page 3, the WO reference states that

"A drawback of the present practice is that during the transport and storage of the unexpanded particles the volatile organic blowing agent may evaporate from the particles, in particular from the voids. When the particles are transported and/or stored at varying temperatures and/or duration, the amounts of e.g. pentane retained may vary significantly. Apart from extra safety measures that have to be taken during transport, like gas-tight packaging, it will be appreciated that such a variation may have an effect on the resulting foam obtained after expansion. Furthermore, the expansion process itself also causes that organic blowing agents originally present in the unexpanded particles are emitted into the environment. In order to reduce the emissions, complicated equipment has been developed to collect the emitted blowing agent for further handling, e.g. combustion. This equipment is to be installed in the facilities of the end-user of the particles, i.e. the customer who produces the foamed articles. This requires additional expertise and investments with these customers. It has therefore become an objective of this invention to prepare polyvinylarene particles that can be expanded but do not have the safety, environmental and foam-related problems."

This discussion clearly outlines all the same problems that the inventors of the instant invention are concerned with. It discusses problems associated with environmental safety, VOC emission, and residual amounts of blowing agent after prolonged storage. Further, as previously discussed, the amount of blowing agent in

Art Unit: 1711

the pre-expanded particle, is clearly shown to be the primary parameter for the ability of the pre-expanded particle to be further expanded.

The bottom line is that the only difference between the claimed invention and the disclosure of the cited reference is that the applicants claim a specific range of the blowing agent in the pre-expanded particle (which, as admitted by the examiner, is not disclosed in the cited reference). The properties of the particles claimed in the instant invention are only seen as a direct function of the amount of the blowing agent, since there is no evidence on the record that any other parameter that is different from the parameters disclosed in the cited reference contribute to the claimed properties. However, as discussed in the previous office actions, lowering (as compared to the disclosed comparative examples), or increasing (as compared to the illustrative examples) of the amounts of the blowing agent to arrive to the particles containing the amount of blowing agent within the claim range represents a classic case of "optimization" of a result-effective variable. Numerous examples of particles (having lower/higher amounts of the blowing agent), in conjunction with extensive discussions as to the effects of the amount of blowing agent, expressed teachings as to how those amount are obtained, and also in view of the discussion on desirability to reduce VOC, and concerns of environmental safety (as all expressly discussed in the cited reference) clearly provides an ordinary artisan with all the necessary knowledge and motivation to optimize the amounts of blowing agents in the pre-expanded particles to achieve the desired combination of properties.

As for the properties of the particles having the amount of blowing agent within the claimed range, as discussed above, in the absence of showing that those properties (shelf life and the ability of expansion to products of the specified density) are function of any factor that is different in the disclosed products versus the product disclosed in the prior art, OTHER than the amount of blowing agent, those properties are reasonable believed to be inherent properties of the pre-expanded particles with the claimed amount of blowing agent (which, as discussed above, would have been obvious for an ordinary artisan). Noting again, that the cited reference expressly addresses exactly the same concerns, (volatile emission, and retention of blowing agent in the pre-expanded particles), the claimed properties are not seen as unexpected. Furthermore, even if, some of the properties of the claimed particles are not disclosed in the prior art, it has been long established in the art that "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

The applicants provided a declaration that states that the claimed "weight percent range has recently become very critical to some of the customers of NOVA Chemicals Inc., particularly to those polystyrene particle converters located in the State of California. This is in view of the fact that some stricter environmental regulations for

Art Unit: 1711

enforcing the limitations of the VOC emissions in the San Joaquin Valley are now being considered. These foamed cellular particles of the invention may be used to mold foamed produce boxes that are used to package vegetables and fruits, e.g. table grapes in this area, and the lower pentane range of 2.5% to 3.5% by weight would be more acceptable to the local environmental authorities." The examiner does not see how this statement provides proof of unexpected results for the claimed blowing agent range. If anything, this statement supports the examiner's position that in view of known amount of blowing agent/property relationship for the pre-expanded beads, one of ordinary skill in the art would have been clearly motivated to optimize the amount of blowing agent to comply with the new, or any existing environmental regulations to achieve the desired balanced properties.

The invention as claimed, thus, is still considered to have been obvious from the disclosure of the cited reference.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1711

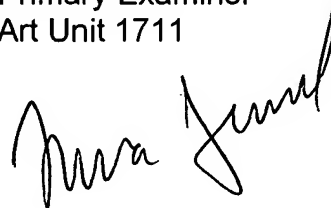
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina S. Zemel whose telephone number is (571)272-0577. The examiner can normally be reached on Monday-Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571)272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Irina S. Zemel
Primary Examiner
Art Unit 1711



ISZ